ONTARIO'S VALUE-ADDED WOOD PRODUCTS MARKET POTENTIAL IN THE U.S. GREAT LAKES STATES

VOLUME 2
INDUSTRY PROFILES

Prepared for the Living Legacy Trust
December 2003

WOODBRIDGE ASSOCIATES INC.
In association with Clayton Research Associates

Preface

This report has been prepared for Ontario's Living Legacy Trust under Phase II of Funding Program 6. The report comprises the following documents:

VOLUME 1
Main Report

VOLUME 2
Industry Profiles

VOLUME 3
Product Benchmarks

See websites:
www.livinglegacytrust.org
www.olma.ca
www.woodbridgeassociates.com

VOLUME 4
Opportunities Report

Available only to Qualified Users. See footnote [1]

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[1] For competitiveness reasons, *Volume 4 Opportunities Report* is available only to firms that have operations within Ontario. Please contact Karan Aquino, Executive Director of the Living Legacy Trust, www.livinglegacytrust.org

Introduction

This multi-volume report focuses on the export market outlook for three specific product groupings produced in Ontario:

Group A: Wood Building Components
Group B: Millwork
Group C: Factory-Built Structures

The goals of this study are to identify dominant and growth products within each of these three product groups. It is intended that the study will help Ontario's manufacturers identify intermediate and end-use markets for at least the dominant and growth products, and link these to increased trade between Ontario and the United States.

Scope and Layout of the Report

'Volume 1 Main Report' provides detailed analyses of export market opportunities in the Great Lakes region for the three sub-groups of Ontario's wood product manufacturing industry. Volume 1 also presents our evaluation of Ontario's competitiveness in these product groups compared with others suppliers. Conclusions are presented for (a) strategic issues and (b) operating issues that might impede Ontario's ability to capture these growth opportunities. Volume 1 contains our recommendations for follow-up initiatives and an Executive Summary.

This supplementary report *'Volume 2 Industry Profiles'* provides a summary of data relating to the industry size, shipments and product-mix profile of the Ontario wood products industry. These are used as a base for some of the analyses presented in Volume 1. The report also presents an overview of the structure and shipments of the wood products industry in the U.S Great Lakes region relating to the three groups of products identified above.

Another supplementary report *'Volume 3 Product Benchmarks'* forms part of this series. It presents an overview of Ontario's wood product exports to the Great Lakes. Benchmark data are provided summarizing Ontario's exports to each state. Volume 3 also presents economic profiles of the eight Great Lakes states with demographic and construction industry projections to 2010 and 2020. These provide a basis for our forecasts of future demand.

Finally, *'Volume 4 Opportunities Report'* presents additional details of the specific opportunities discussed in Volume 1 along with an analysis of the economic, financial and policy implications of the growth projections.

Volumes 1-3 are available to the general public from the Living Legacy Trust. Volume 4 is available only to firms that have operations within Ontario.

A *Glossary of Terms Used* is provided in Appendix A.

IMPORTANT NOTES & DISCLAIMER

The Consultants have prepared these reports on the basis of the best available information and provide these findings in good faith with the intended goals as stipulated in the terms of reference. The Consultants do not accept any responsibility for any decisions taken directly or indirectly, in whole or in part, based on information or findings contained in the report. Users of the information are advised to verify all data and analyses for themselves before proceeding with any course of action that appears merited by the analyses and conclusions provided.

The Living Legacy Trust

The *Living Legacy Trust* is a $30 million fund established by the Province of Ontario to invest in natural resource management projects in northern Ontario. The assets of the Trust are managed by an independent Board of Directors which represents various stakeholder groups. Projects receiving funding will bring economic, social and recreational benefits to the people of Ontario and serve as models of excellence in forestry, fish and wildlife practices.

Value-Added Committee Members

Value-Added Committee members acting as advisors on the Phase II study include the following.

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The Ontario Wood Products Industry

Chart 1

The Ontario Wood Products Industry

This section provides a statistical profile of the Ontario value-added wood products sector, and its role within the total output of the province's forest products manufacturing industry. Production, exports, employment and the consolidation of sawmilling capacity are reviewed.

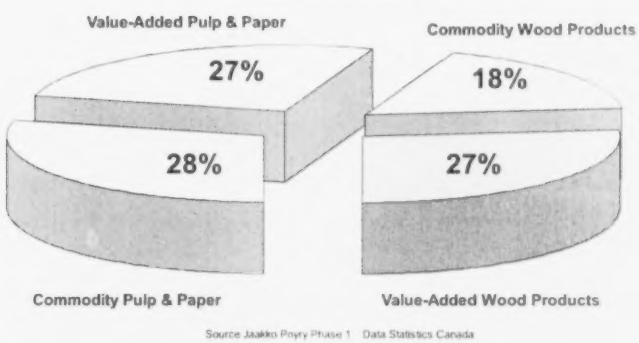
Value of Output

In the Phase I report, Jaakko Poyry noted that the value of forest products manufactured in Ontario was over C$15 billion in 1997[2]. The largest segment of the industry was pulp and paper, accounting for about 55% of shipments value (Chart 2). The balance of 45% was wood products, including furniture.

Chart 2

Ontario Forest Products Industry
Value of Shipments 1997

Total C$15.3 Billion



Source Jaakko Poyry Phase 1 Data Statistics Canada

☐ Commodity Pulp & Paper ☐ Value Added Pulp & Paper
☐ Commodity Wood Products ☐ Value Added Wood Products

Within the pulp and paper sector, shipments of commodity grades (comprising pulp, newsprint and other lower valued papers) accounted for about half of shipments from pulp and paper mills and plants in Ontario. Value-added papers and paperboards, including corrugated boxes, folding carton and other packaging grades as well as consumer grades, such as tissues, along with fine papers accounted for the other half.

[2] Jaakko Poyry. Assessment of the Status and Future Opportunities of Ontario's Solid Wood Value-Added Sector. Research Report (26 June 2001) and other volumes.

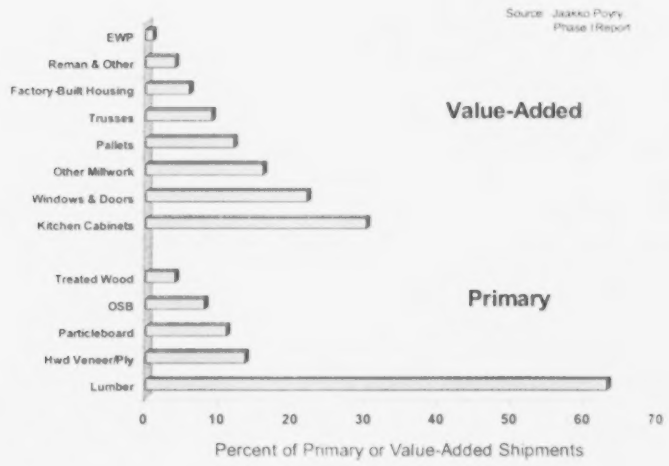
In the wood products industry, value-added shipments accounted for 60% of total shipments if wood furniture is included, or about 40% if they are excluded. More recent data would show that there has been a significant increase in the shipments value and proportion of OSB, EWPs and building products.

The main products manufactured by the primary wood products industry are softwood lumber, oriented strand board (OSB) and medium density fiberboards (Chart 3). In addition, the primary sector is a producer of hardwood plywood and hardwood lumber (but a net importer of this product), treated wood[3], hardwood veneers & plywood and particleboard.

Ontario's remanufacturing sector processes a wide range of intermediate products, adding value to primary output, and is included throughout our reports as a vital part of value-added manufacturing.

Chart 3

Ontario's Wood Product Shipments 1997



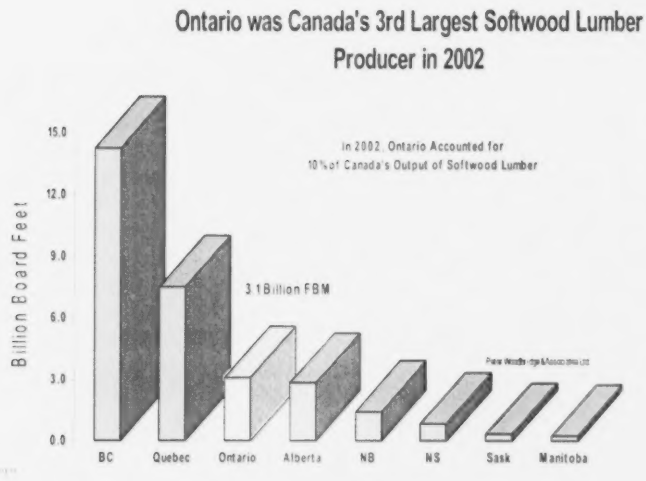
Value-added wood products manufactured in Ontario include a significant remanufacturing sector, kitchen and bathroom cabinets, wood windows and doors, mouldings, other millwork, wood pallets and crates, wood trusses, wall panels, engineered wood products, HUD Code manufactured housing and pre-cut and modular structures.

The industry also produces I-Joists, engineered finger-joint lumber, laminated beams and a variety of non-structural engineered wood products, such as edge glued panels. Machine stress rated (MSR) lumber production in the province is comparatively low. This issue is addressed elsewhere in the report.

Ontario ranks as #3 within Canada as a producer of softwood lumber. Chart 4 shows Ontario's position behind BC and Quebec, and just ahead of Alberta which grew rapidly in significance during the 1990's.

[3] Treated wood can also be defined as a value-added manufactured product.

Chart 4



Over the past decade, the size of Ontario's wood products industry has grown substantially. Based on the province's export market performance in all wood products aggregated, the industry in Ontario has improved its competitive performance compared with the rest of Canada.

Chart 5

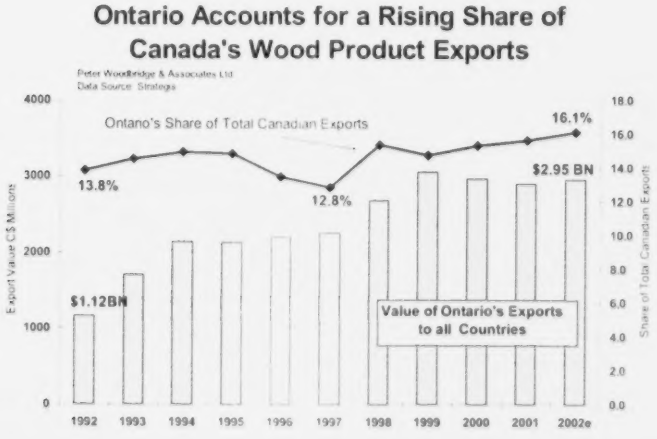


Chart 5 provides an overall summary of the trends since 1992. Compared with 1992, when Ontario exported about $1.1 Billion of wood products to all countries, by 1999, this had risen to nearly $3.1 Billion.

The chart shows that even though low commodity wood product prices have contributed to a reduction in the overall value of the province's export shipments since 1999, the province's share of total Canadian exports has continued to rise. In 2002, we estimate that Ontario held a 16.1% share of total Canadian exports to all countries compared with 12.8% in 1997 and 13.8% in 1992.

Most of the increased export shipments have been to the United States. In addition, with increasingly buoyant housing markets within Canada, and particularly in Ontario, it is clear that demand for the province's wood products has been increasing.

Ontario's Wood Product Exports

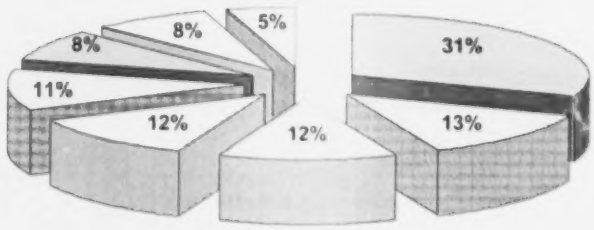
In 2002, 96% by value of Ontario's wood product exports (excluding wood furniture) were shipped to the United States, with a total value of over C$2.8 Billion. Less than 4% were sold overseas. Like many areas of Canada, Ontario has increased its market dependence on the US over the past decade.

60% by value of Ontario's wood products exports to the US in 2002 were shipped to the US Great Lakes states. The composition of export shipments by state within the Great Lakes region is summarized in Chart 6.

Chart 6

Michigan is the Largest Overall Market Area for Ontario's Wood Product Shipments to the Great Lakes

Peter Woodbridge & Associates Ltd.
Data Source: Strategis



The chart shows that Michigan is by far the largest single market area for Ontario's wood product exports to the region. In 2002, Michigan accounted for an estimated 31% of the province's exports by value to the region. The next largest market was Ohio, accounting for an estimated 13% of the total, followed by Wisconsin (12%), New York (12%), Pennsylvania (11%), Illinois (8%), Indiana (8%) and Minnesota (5%).

Softwood Lumber Shipment Volumes

Fluctuations in product prices and changes in exchange rates can disguise export market performance when this is expressed in value terms. Table 1 provides a summary of Ontario's softwood lumber shipments by volume to the US Great Lakes states for the period 2000 to 2002.

Table 1

Ontario's Lumber Shipments to US Great Lakes States, by Volume
Million fbm

State / Region	2000	2001	2002	2002 Rank
Michigan	385.3	370.7	402.3	#1
Ohio	102.6	123.2	134.8	#3
Wisconsin	116.7	144.1	182.4	#2
New York	30.5	41.4	34.7	#8
Pennsylvania	64.6	73.6	59.8	#7
Illinois	127.3	116.5	110.3	#4
Indiana	92.4	94.2	100.0	#5
Minnesota	80.9	78.9	67.1	#6
Great Lakes	**1000.3**	**1042.6**	**1091.4**	**n.a.**
U.S. Total	1784.1	1871.6	1986.7	n.a.
Great Lakes % of U.S. Total	**56.1%**	**55.7%**	**54.9%**	**n.a.**

Woodbridge Associates Inc.; SFPA Distribution of Canadian Lumber Shipments 2002.
n.a. = not applicable

In 2002, Ontario shipped nearly two billion fbm of softwood lumber to the United States. Close to 55% of this volume was shipped to the US Great Lake states, but subsequently, some may have been shipped beyond the region.

The Great Lakes region clearly is Ontario's most important market region within the US. Shipments to other regions increased slightly over the period. Table 1 shows that the ranking of importance of each of the Great Lakes states for Ontario's lumber shipments by volume differs slightly from the shipment value data in Chart 6, but conveys essentially the same conclusions.

In particular, New York has been of less significance as a destination for Ontario's softwood lumber shipments (Quebec is a major supplier) than for value-added wood products.

US Softwood Lumber Duty and Recent Market Impacts

In May 2002, a 27% combined average duty was imposed by the United States on imports of Canadian softwood lumber from most sources. Additionally, sharp fluctuations in lumber and other commodity prices (notably OSB in summer 2003), along with exchange rate fluctuations and mill production cutbacks, have had a sharp negative impact of the value of Ontario's exports to the U.S.

This impact is shown in the sharp drop in 2003 shipments value in Chart 7.

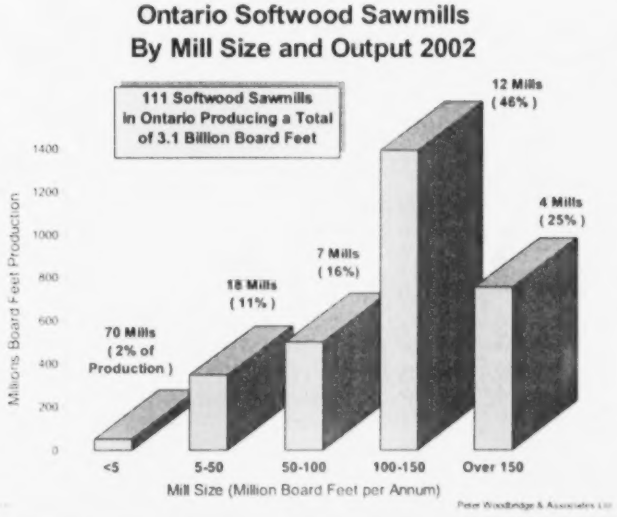
Chart 7

Between 1999 and 2002, the value of Ontario's wood product exports to the United States remained within the C$2.7 Billion to C$2.9 Billion range. For the first five months of 2003, the value of Ontario s shipments of all wood products combined dropped by 19% to C$2.3 Billion on a seasonally adjusted annualized rate.

Consolidation in Ontario's Integrated Wood Products Industry

Over the past decade, many of Ontario's independent primary producers have disappeared. Today, the province's 111 softwood sawmills produce over 3 billion board feet of lumber. There is considerable diversity in size and production capability. Around 70 small single-location and specialty mills produce only 2% of the total output (Chart 8).

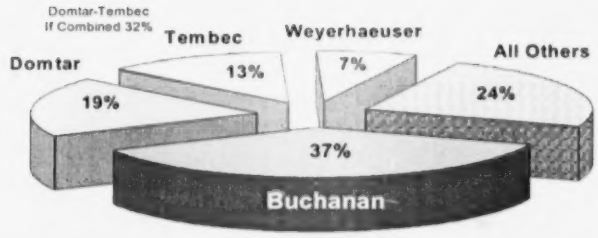
Chart 8



On the other end of the spectrum, four large-scale sawmills (over 150 million fbm annual output) produce 25% of the province's softwood lumber output. The next 12 mills produce a further 46% of the total output.

Chart 9

Ontario Softwood Lumber Production 2002



Tembec includes proposed acquisition of Weyerhaeuser's Chapleau, Ontario sawmill in October 2003

Ontario Total 3.1 Million FBM (111 Mills)
65% of Production from 16 Mills each with 100 Million FBM Output
77% of Production from 23 Mills each with 50 Million FBM Output

#2885-333 revised

Four firms dominate the Ontario lumber industry and there are signs that consolidation will continue. In 2003, Domtar and Tembec announced a joint-venture merger of their respective wood products manufacturing, allied forestry and marketing operations, affecting several sawmills and woods operations in Ontario. The joint-venture merger, now cancelled, would have further concentrated the ownership of sawmills located within the province (Chart 9).

Currently, the largest single producer is Buchanan, accounting for about 37% of Ontario's lumber output in 2002. Domtar accounted for 19% and Tembec accounted for 13% of 2002 production. Weyerhaeuser is the fourth largest producer with about 7%.

Bowater and others are include in 'All Others' representing 25% of Ontario's lumber ouput in 2002. In many cases (e.g. Domtar, Bowater), the sawmills are directly associated with integrated pulp and paper operations to which they supply chips.

Employment in the Ontario Wood Products Industry

The Phase I report noted that direct employment by the Ontario forest products industry totaled over 29,000 persons in 1997[4]. This excludes employment in the furniture industry. Roughly 50% of the total were employed in primary wood product manufacturing activities and the other half in a variety of value-added processing jobs (Chart 10).

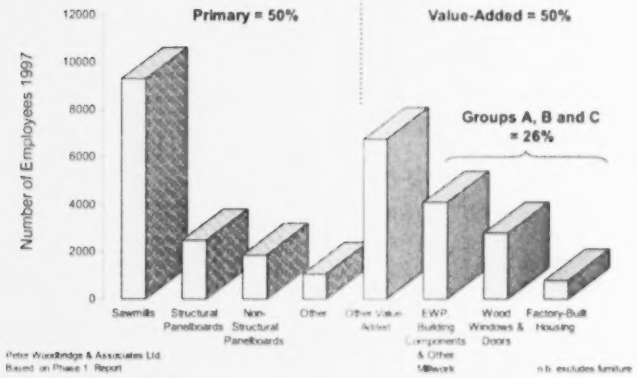
The chart also shows that employment in the three groups of products that are the focus of this report was about 26% of the total, or about 7,625 jobs. The largest concentration of employment (14%) was in the structural engineered wood, building components and 'other millwork' category (close to 4,100 jobs).

[4] The Ontario Forest Industries Association (OFIA) notes that the forest industry directly or indirectly employs approximately 180,000 people, or 1 in 31 employed Ontarians.

Chart 10

Ontario Wood Products Industry
of Employees

Total 29,000 Employees in 1997



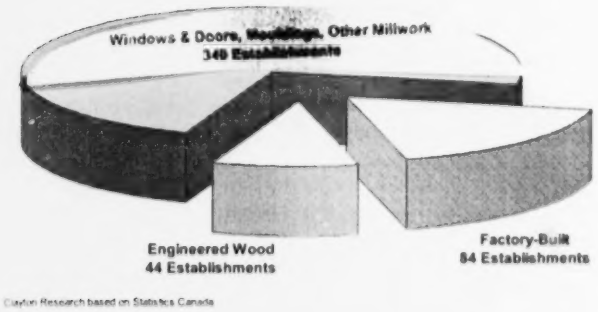
The wood windows and doors sub-sector accounted for a further 2,770 jobs (9%-10%) and the factory-built sector, roughly 2% to 3%. The latter appears to be understated because some pre-cut homes employees are included under 'other value-added'.

Ontario Value-Added Sectors

Statistics Canada notes that, in 2001, there were 468 establishments manufacturing the products included in the three groups that are the focus of this report. Of these, 44 produced engineered wood products, 340 manufactured wood windows, doors and other millwork, while 84 were producers of pre-cut homes and factory-built structures (Chart 11).

Chart 11

Ontario Value-Added Industry 2001
 # Establishments Manufacturing Selected Products



□ Millwork □ Factory-Built EWP

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Ontario Wood Products Industry
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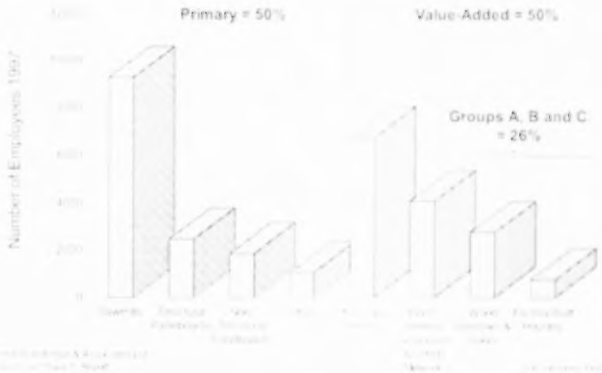

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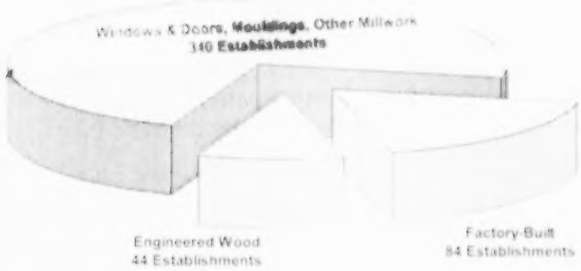


Millwork Factory-Built EWP

Chart 11 provides only a partial picture. It does not indicate the relative importance of these three manufacturing groups. EWP plants, for example, tend to be large scale. Some, such as the new Timberstrand LSL plant in Kenora, ON are state-of-the-art and among the largest in the world. In other instances, many of Ontario's millwork plants are very small scale.

How Does Ontario Compare with the Great Lakes in Value-Added Employment?

Wood products employment in the US Great Lakes region in 1997 (Census data) was over 143,000 persons. Of this, 29% was in primary wood products and 71% was in value-added activities.

Global Benchmarks

Various assessments, including the Phase I report, acknowledge that Ontario's development of its value-added processing sectors is well ahead of all other areas of Canada, except Quebec (which has a similar level of value-added development). In comparing Ontario with benchmark regions of the world, Jaakko Poyry points out in the Phase I Report that most Canadian provinces including Ontario are still very dependent on lower value commodity products.

Corporate Earnings, Profitability and CAPEX

Price Waterhouse carried out a study[5] in 1999 which was based on a sample of publicly quoted firms representing roughly half of Ontario's sales of wood products and paper and allied products. The study showed that despite significant levels of annual capital expenditures, the industry's underlying costs and debt levels were high, company earnings were low and return on capital was low on average.

The study also showed that return on capital employed was highest in Ontario's lumber and panels sub-sectors, and lowest in market pulp and publication papers (newsprint).

Transportation Networks in Northern Ontario

One of the features of the Ontario forest industry central to this report is the commercial relationships that exist between northern Ontario and southern Ontario. In particular, comparatively few of the products manufactured in northern Ontario are further processed in southern Ontario. Many are shipped directly to export markets or to the Toronto market.

Most value-added wood product processing facilities within Ontario are heavily concentrated in the southern part of the province where plants are close to major international road and rail transportation networks and US markets. Many of these plants buy their raw materials and semi-processed materials directly or indirectly from out of the province.

In contrast to the relative ease of access to markets from locations in southern Ontario, value-added plants located in northern Ontario frequently have to overcome significant infrastructural, weather-related and other obstacles. In order to remain economic, they have to mirror the success of the primary wood products industry (which mainly is located in northern Ontario) and produce large volumes of comparatively standardized products and ship these via lower cost bulk transportation facilities.

Whereas value-added plants in southern Ontario are able to respond quickly and efficiently to custom orders from the US and can operate successfully on a batch production basis (e.g. truss manufacturers), the economics of value-added manufacturing in northern Ontario are fundamentally different.

[5] *The Primary Forest Products Industry in Ontario, 1998*. Report Tables. (Sept 1999). Price Waterhouse.

The U.S. Great Lakes Region and State Wood Products Industry Profile

WOODBRIDGE ASSOCIATES INC.
In association with Clayton Research Associates
December 2003

Introduction to US Great Lakes Industry

Value-Added Wood Product Sector Development

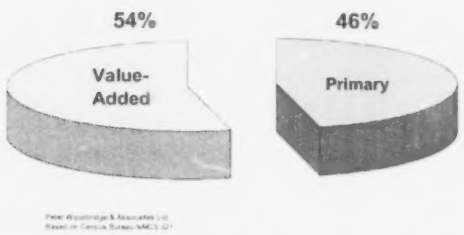
Development of the value-added wood products sector in the United States in aggregate is well in advance of the overall average for Canada. Within each country, the situation differs widely for each state and province.

The Phase I report provided various global and North American benchmarks. One of the conclusions of Phase 1 was that value-added manufacturing activities do not necessarily need to depend on the existence of a well developed integrated forest industry, many of which globally have links to standing timber[6]

Chart 12 shows that for the US as a whole, value-added manufacturing activities accounted for 54% of wood product sector shipments by value in the year 2000, while primary processing accounted for 46%.

Chart 12

US Shipments of Wood Products in 2000



In comparison with the US average, Ontario (along with Quebec) is well developed in the extent of its value-added manufacturing.

Chart 13 compares the output of value-added wood products for each dollar of commodity wood products manufactured (the data in this example are in Canadian dollars, but the ratio remains the same in any currency). US states, such as Washington, have a comparatively low ratio of value-added manufacturing in their overall mix, while in the North East US, the average is very high.

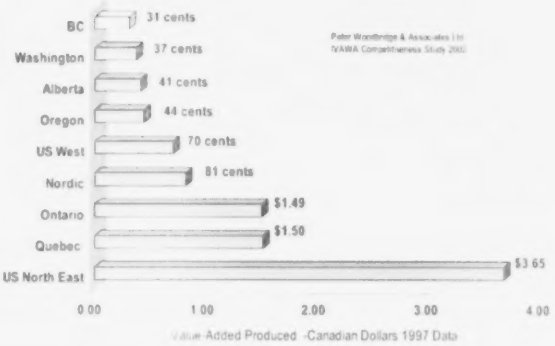
Chart 13 shows that Ontario and Quebec produce about $1.50 of value-added manufactured products for every dollar of primary wood products.

But it should be noted that the definition of value-added in this example includes a wider range of products (including kitchen and bathroom cabinets and furniture). So, direct comparison of the two charts should be made cautiously.

In the following pages, the structure of the wood products for each of the Great Lakes states is summarised in terms of the three groups of products that are the focus of this report.

Chart 13

Output of Value-Added Wood Products For Each $1 of Commodity Wood Products Manufactured

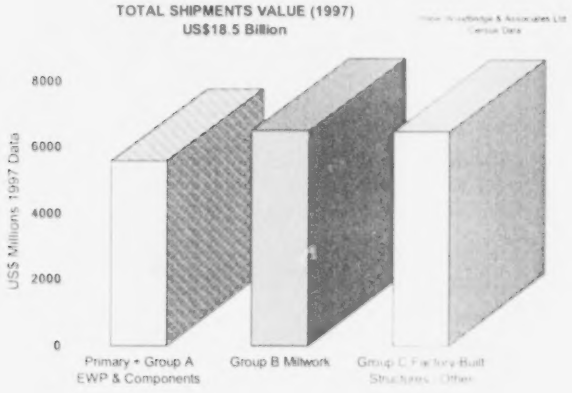


[6] In Canada, this tends to be through licencee links to Crown (public timber) whereas, in the United States, there has been a significant relinquishing by US manufacturing firms of direct linkages to standing timber. Industry-owned private timberlands in particular have been sold to others, such as large pension funds.

Great Lakes Wood Products Industry Profile

Chart 14

Chart 15



Total wood products shipments in the Great Lakes were valued at US$18.5 Billion in 1997 compared with US$3.3 Billion (C$4.5 Billion[7]) for Ontario. Overall, millwork (Group B) is the largest sector. Group A products (included with primary wood products in Chart 15) are substantially smaller in shipments value. Group C products, comprising factory built and other wood products, are significant in overall value. Jurisdictions can have a well developed value-added industry that is not necessarily dependent on the prior existence of a large primary sector.

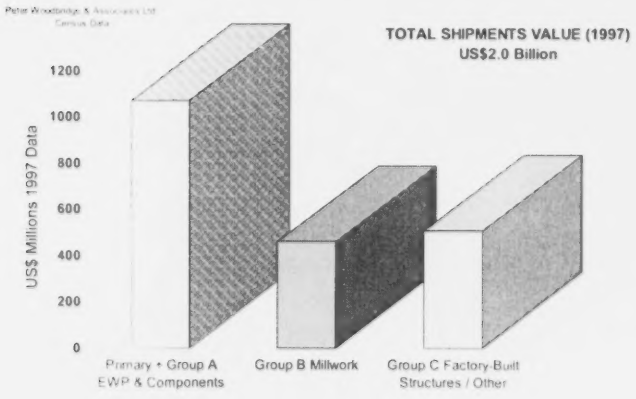
[7] Ontario sales 1997. Source: Jaakko Poyry, Phase 1 Report.

Michigan Wood Products Industry Profile

Chart 16

Chart 17

Michigan
Value of Shipments by Industry Group



US Census Bureau data for 1997 show the value of shipments of principal value-added products produced in Michigan was as follows: (i) Trusses, US$211 million; (ii) Other Millwork, US$105 million; and (iii) Prefabricated Wood Buildings, US$132 million.

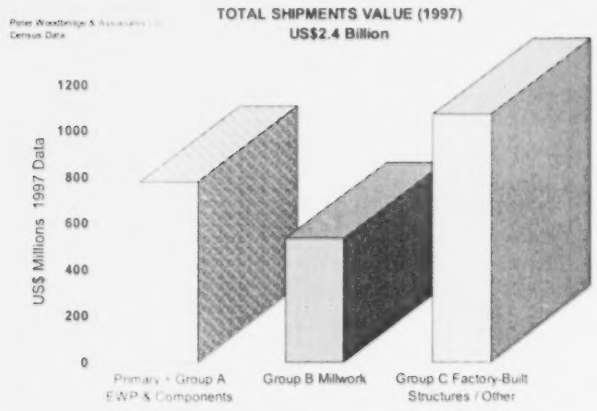
Ohio Wood Products Industry Profile

Chart 18

Ohio

Chart 19

Ohio
Value of Shipments by Industry Group



US Census Bureau data for 1997 show the value of shipments of principal value-added products produced in Ohio was as follows: (i) Trusses, US$188 million, (ii) Wood Windows & Doors, US$211 million; (iii) Other Millwork, US$142 million; (iv) HUD Code Manufactured Housing, US$109 million; and (v) Prefabricated Wood Buildings, US$91 million.

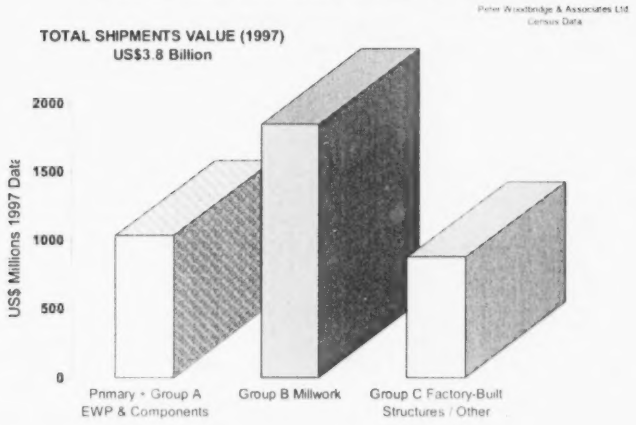
Wisconsin Wood Products Industry Profile

Chart 20

Wisconsin

Chart 21

Wisconsin
Value of Shipments by Industry Group



US Census Bureau data for 1997 show the value of shipments of principal value-added products produced in Wisconsin was as follows: (i) Wood Windows and Doors, US$1.48 billion, i.e. the largest producing region in the US in 1997; (ii) Other Millwork, US$158 million; (iii) HUD Code Manufactured Housing, US$122 million; and (iv) Prefabricated Wood Buildings, US$305 million.

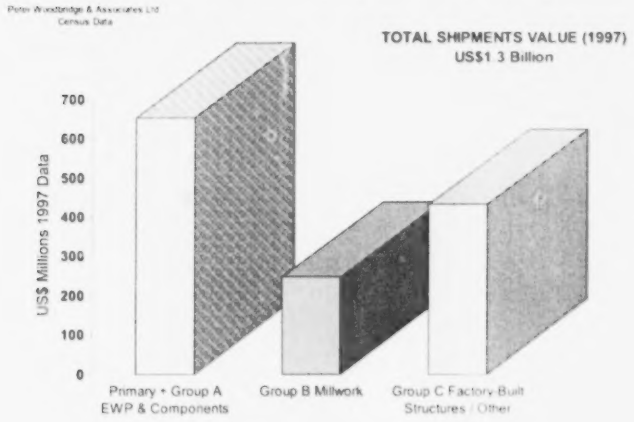
New York Wood Products Industry Profile

Chart 22

New York

Chart 23

New York
Value of Shipments by Industry Group



US Census Bureau data indicate that in 1997 the value of shipments of principal value-added products produced in New York was as follows: (i) Truss Manufacturing, US$47 million; (ii) Wood Windows and Doors, US$79 million; and (iii) Other Millwork, US$75 million.

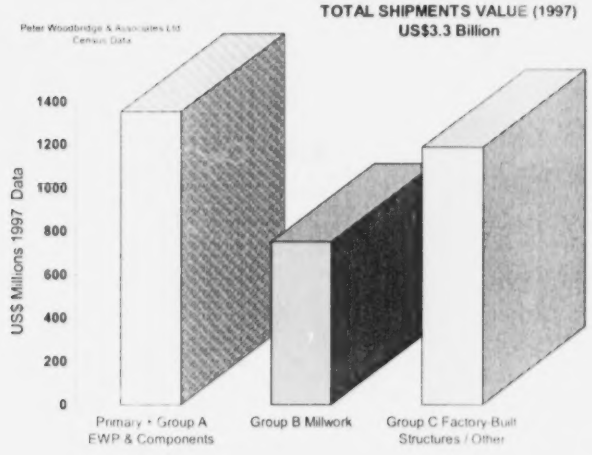
Pennsylvania Wood Products Industry Profile

Chart 24

Pennsylvania

Chart 25

Pennsylvania
Value of Shipments by Industry Group



US Census Bureau data indicate that in 1997 the value of shipments of principal value-added products produced in Pennsylvania was as follows: (i) Wood Windows and Doors, US$246 million; (ii) Other Millwork, US$117 million; (iii) HUD Code Manufactured Housing, US$451 million; and (iv) Prefabricated Wood Buildings, US$402 million.

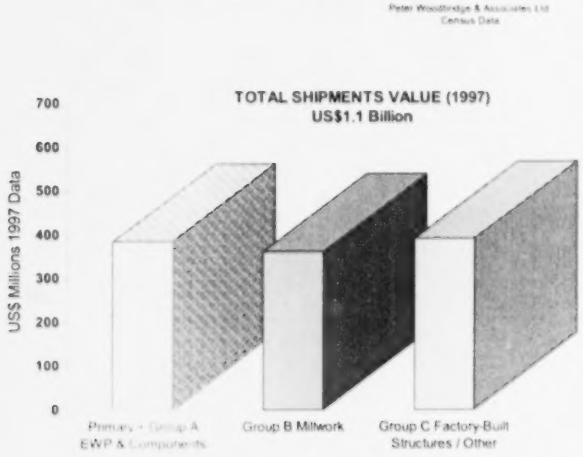
Illinois Wood Products Industry Profile

Chart 26

Illinois

Chart 27

Illinois
Value of Shipments by Industry Group



US Census Bureau data indicate that in 1997 the value of shipments of principal value-added products produced in Illinois was as follows: (i) Truss Manufacturing, US$144 million; (ii) Wood Windows and Doors, US$267 million and (iii) Other Millwork, US$78 million.

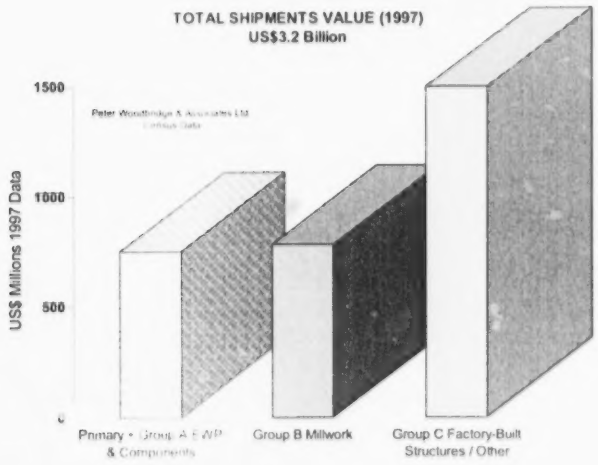
Indiana Wood Products Industry Profile

Chart 28

Indiana

Chart 29

Indiana
Value of Shipments by Industry Group



Indiana is well known for its prominent place in HUD Code manufactured home production. In 1997, US Census data indicate that the state shipped over US$1.25 Billion of these homes. Indiana also shipped US$140 million of pre-cut and modular homes. It is a sizeable producer of wood windows and doors (US$243 million shipped) and of other millwork (US$137 Million shipped in 1997)

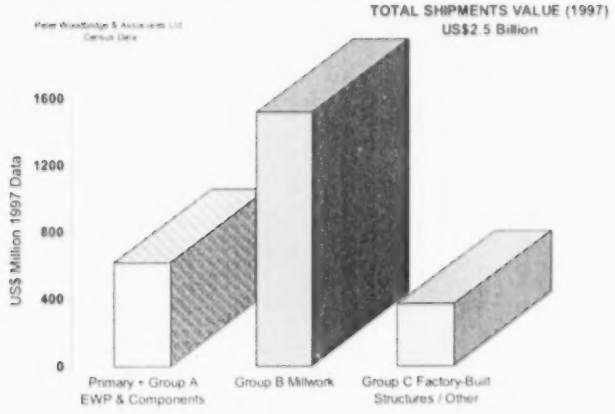
Minnesota Wood Products Industry Profile

Chart 30

Minnesota

Chart 31

Minnesota
Value of Shipments by Industry Group



US Census data confirm that Minnesota is a major producing region for wood windows and doors, and ranked #2 nationally for this product group in 1997 with over US$1.37 billion in shipments (Wisconsin was #1). The state also has a modest sized 'other millwork' industry shipping US$45 million in 1997. HUD Code manufacturing is a significant activity, with 1997 shipments valued at US$115 million. Pre-cut and modular buildings shipments were US$85 million during 1997, or about twice the size of Ontario's shipments to the region.

LIVING LEGACY TRUST

Corporate Concentration Levels in the U.S. Wood Products & Value-Added Sector

Corporate Concentration Levels in the US Wood Products and Value-Added Sector

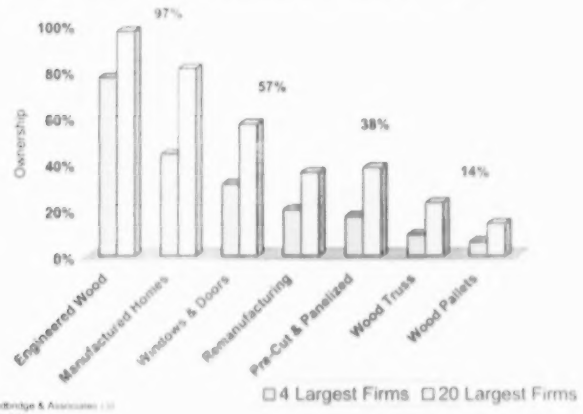
In Volume I, we provide some features of our competitiveness model[8]. An important driver of competitiveness is competition itself. Competitive industries tend to encourage competitive actions and responses, although they may not stimulate greater levels of innovation and technological development.

The softwood lumber industry is highly competitive. Innovations by one firm are soon adopted by most others in rapid order. The structure of the softwood lumber industry provides little reward to the pioneer of innovation. Frequently, innovation under these circumstances is simply just a means of staying in business.

North America's engineered wood products business has several sub-sectors where levels of corporate concentration are high. Many leading-edge products used widely in commercial applications are patented. These circumstances allow the fairly small number of firms involved to earn rates of return which permit further investment in technological leadership and market share. Eventually, almost all products are replicated, as we show in the life-cycle discussion in Volume I.

Chart 32

Corporate Concentration in U.S. Value-Added Wood Products Manufacturing



Peter Woodbridge & Associates Ltd.
US Census data

Chart 32 summarizes corporate concentration levels recently in parts of the US value-added wood products manufacturing sector. For each of several sub-sectors, the chart shows the percentage of ownership held by (a) the 4 largest firms and (b) the largest 20 firms.

High levels of corporate concentration are evident in the EWP business on average and in manufactured homes. Firms in both of these industries have been aggressive in the past in acquiring additional capacity. Very low levels of corporate concentration are found in the truss industry where innovation and investment in R&D typically also are low.

[8] See *Manufacturing of Value-Added Wood Products in Western North America: How Competitive is BC? (March 2003)*. Produced for the IVAWA by Peter Woodbridge & Associates Ltd. Available as a free download at www.woodbridgeassociates.com

In the next section, we provide some illustrations of CAPEX productivity data used in our assessment of regional competitiveness.

CAPEX and Productivity Measures

CAPEX and Productivity Measures

Chart 33

Structural EWPs Create the Highest Value-Added per Employee

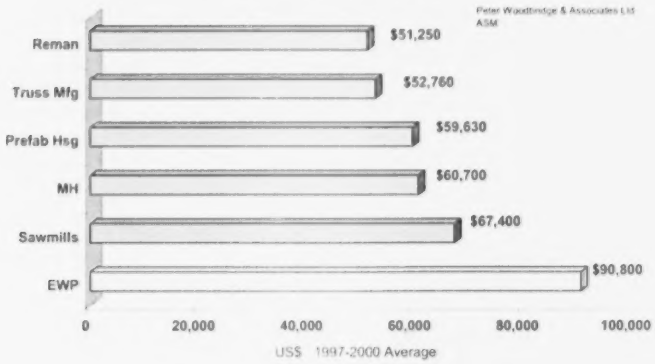


Chart 34

Capital Spending (CAPEX) Per Employee 1997-2001 Average

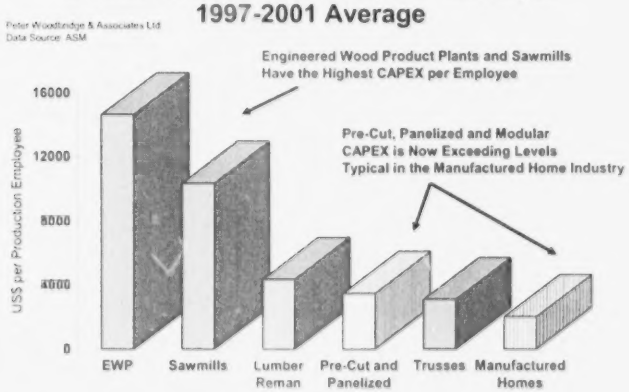


Chart 35

Structural EWPs: Size of Firms in the United States

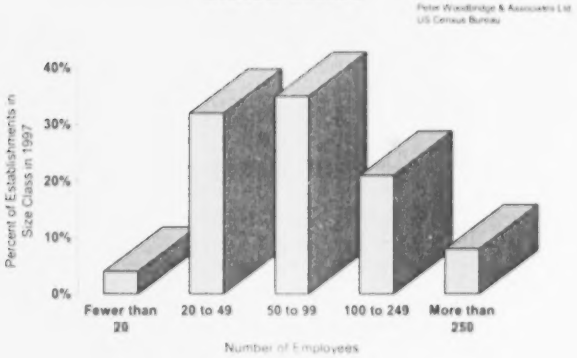
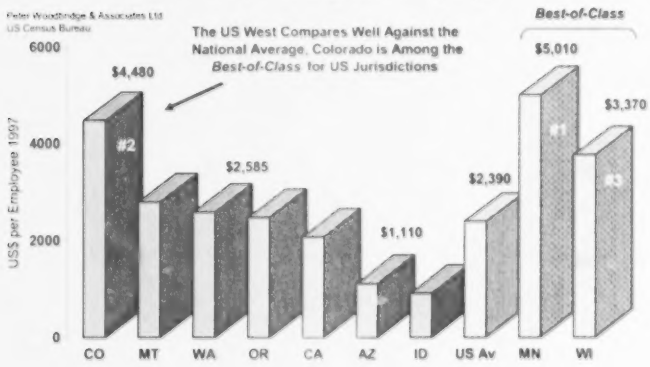


Chart 36

Pre-Cut, Panelizers & Modular Plants: Capital Spending per Employee



Appendix A

Definitions and Glossary

Appendix A

Definition of the U.S. Great Lakes Area

The U.S. Great Lakes States region comprises eight states that geographically form natural export markets for Ontario. The province has borders with the states of New York, Michigan, Wisconsin and Minnesota and is located in close proximity to the remaining states in the region: namely, Pennsylvania, Indiana, Ohio and Illinois.

Glossary of Terms Used

OSB	Oriented Strand Board / Waferboard
MDF	Medium Density Fibreboard
MSR	Machine Stress Rated (lumber)
EWP	Engineered Wood Product
LLT	Living Legacy Trust
BC	British Columbia
US	United States
NAICS	North American Industrial Classification System
SFPA	Southern Forest Products Association
OFIA	Ontario Forest Industries Association
OLMA	Ontario Lumber Manufacturers Association
FTE	Full Time Equivalent
HUD	Housing and Urban Development
R&D	Research & Development
CAPEX	Capital Expenditures
PCPI	Per Capita Personal Income
SIPs	Structural Insulated Panels
EWF	Engineered Wood Floor
MHI	Manufactured Housing Institute
USITC	U.S. International Trade Commission

SPF	Spruce-Pine-Fir
SYP	Southern Yellow Pine
LVL	Laminated Veneer Lumber
SCL	Structural Composite Lumber (same as LVL)
LSL	Laminated Strand Lumber (eg. TimberStrand, see page 72)
LSL	Laminated Structural Lumber (eg. Anthony Power Beam® LSL
PSL	Parallel Strand Lumber (eg. Parallam)
SME	Small and Medium Enterprises
NAREIT	National Association of Real Estate Investment Trusts
SLA	Softwood Lumber Agreement
FJ	Fingerjoint
VA	Value-Added